

CLAIMS

1. (Currently amended) An optical imaging system comprising:  
a taking lens that collects light from a scene being imaged with the optical imaging system;

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a 3D camera comprising at least one photosurface that receives light from the taking lens simultaneously from all points in the scene and provides data for generating a depth map of the scene responsive to the light; and

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an imaging camera comprising at least one photosurface that receives light from the taking lens and provides a picture of the scene responsive to the light; and

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a light control system that controls an amount of light from the taking lens that reaches at least one of the 3D camera and the imaging camera without affecting an amount of light that reaches the other of the 3D camera and the imaging camera.

2. (Currently amended) An optical imaging system according to claim 1 wherein the 3D camera and the imaging camera are boresighted with the taking lens.

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3. (Previously presented) An optical imaging system according to claim 1 wherein the at least one photosurface of the 3D camera and the at least one photosurface of the imaging camera are homologous.

4. (Currently amended) An optical imaging system according to claim 1 wherein the light control system comprises a light controller adjustable to control the amount of light from the taking lens that reaches the imaging camera without affecting the amount of light from the taking lens that reaches the 3D camera.

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5. (Previously presented) An optical imaging system according to claim 4 wherein the light controller comprises an iris.

6. (Previously presented) An optical imaging system according to claim 4 wherein the light controller comprises a neutral density filter.

7. (Currently amended) An optical imaging system according to claim 1 wherein the light control system comprises a light controller adjustable to control the amount of light collected by the taking lens that enters the imaging system.

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8. (Currently amended) An optical imaging system according to claim 7 wherein the light controller that controls the amount of light collected by the taking lens that enters the imaging system comprises an iris.

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9. (Currently amended) An optical imaging system according to claim 1 and comprising a light controller adjustable to control the amount of light from the taking lens that reaches the 3D camera without affecting the amount of light from the taking lens that reaches the imaging camera.

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10. (Currently amended) An optical imaging system according to claim 9 wherein the light controller that controls the amount of light from the taking lens that reaches the 3D camera comprises an iris.

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11. (Previously presented) An optical imaging system according to claim 1 wherein the 3D camera is a gated 3D camera.

12. (Original) An optical imaging system according to claim 11 and comprising a pulsed light source that radiates a train of light pulses to illuminate a scene being imaged with the optical imaging system.

13. (Original) An optical imaging system according to claim 12 wherein the pulsed light source radiates IR light.

14. (Previously presented) An optical imaging system according to claim 11 wherein the 3D camera comprises at least 2 photosurfaces.

15. (Currently amended) An optical imaging system according to claim 14 wherein the 3D camera comprises a light guide that receives light from the taking lens and directs portions of the light that it receives to each of the at least two photosurfaces.

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16. (Currently amended) An optical imaging system according to claim 15 and comprising a single shutter, which when gated open enables light from the taking lens to reach the light guide.

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17. (Original) An optical imaging system according to claim 16 and comprising a controller that gates the single shutter open and closed.

18. (Original) An optical imaging system according to claim 17 wherein the controller controls each of the photosurfaces to be activated and deactivated and wherein when a photosurface is activated, it is sensitive to light incident thereon.

19. (Original) An optical imaging system according to claim 18 wherein each time that the controller gates on the single shutter it activates one and only one of the at least two photosurfaces.

20. (Original) An optical imaging system according to claim 19 wherein the at least two photosurfaces comprises three photosurfaces.

21. (Original) An optical imaging system according to claim 20 wherein following a time that at least one light pulse is radiated, the controller gates on the single shutter for a first gate and turns on a first photosurface and wherein the first gate is timed so that light reflected from the at least one light pulse by a region in the scene is registered by the first photosurface.

22. (Original) An optical imaging system according to claim 21 wherein following a time that at least one light pulse in the train of light pulses is radiated, the controller gates on the single shutter for a second gate and activates a second one of the photosurfaces and wherein the second gate is timed so that during the second gate no light from the at least one light pulse reflected by the region is registered by the second photosurface.

23. (Currently amended) An optical imaging system according to claim 22 wherein following a time that at least one light pulse in the train of light pulses is radiated the controller gates on the single shutter for a third gate and activates a third one of the photosurfaces and wherein the controller controls the gate width and timing of the third gate so that during the third gate substantially all light from the at least one pulse that is reflected by the region, which is collected by the taking lens, is registered by the third photosurface.

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24. (Previously presented) An optical imaging system according to claim 15 wherein the light guide is a three-way prism.

25. (Currently amended) An optical imaging system according to claim 1 and comprising a beam splitter that receives light from the taking lens and directs a portion of the received light towards the 3D camera and a portion of the received light to the imaging camera.

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26. (Currently amended) An optical imaging system according to claim 7 wherein the light guide is a four-way prism that receives light from the taking lens and directs a portion of the received light to the imaging camera.

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27. (Previously presented) An optical imaging system according to claim 1 wherein the imaging camera comprises a color camera.

28. (Currently amended) An optical imaging system according to claim 1 wherein the imaging camera is a color camera comprising separate R, G and B photosurfaces and comprising a four way prism that receives light from the taking lens and directs a portion of the received light to each of the R, G and B photosurfaces and to the single shutter of the 3D camera.

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29. (Withdrawn) A gated 3D camera comprising:  
a taking lens system that collects light from a scene imaged with the 3D camera;  
at least 2 photosurfaces;

a light guide that receives light from the taking lens and directs portions of the light that it receives to each of the at least two photosurfaces;

a single shutter, which when gated open enables light from the taking lens system to reach the light guide; and

a controller that controls the shutter and the photosurfaces and gates on a photosurface of the at least two photosurfaces by activating the photosurface and subsequently gating the single shutter open and gates off the photosurface by gating the single shutter closed and subsequently deactivating the photosurface and wherein the controller gates on only one photosurface at a time.

30. (Withdrawn) A 3D camera according to claim 29 wherein the at least two photosurfaces comprises three photosurfaces.

31. (Withdrawn) A 3D camera according to claim 30 and comprising a pulsed light source that radiates a train of light pulses to illuminate a scene being imaged with the 3D camera.

32. (Withdrawn) A 3D camera according to claim 31 wherein following at least one time at which a light pulse in the train of light pulses is radiated, the controller gates on a first photosurface of the three photosurfaces for a first gate period which is timed so that light reflected from the light pulse by a region in the scene is registered by the first photosurface.

33. (Withdrawn) A 3D camera according to claim 32 wherein following at least one time at which a light pulse in the train of light pulses is radiated, the controller gates on a second one of the three photosurfaces for a second gate period which is timed so that during the second gate no light from the light pulse reflected by the region is registered by the second photosurface.

34. (Withdrawn) A 3D camera according to claim 33 wherein following at least one time at which a light pulse in the train of light pulses is radiated, the controller gates on a third one of the photosurfaces for a third gate period and which is timed and has a gate width so that during the third gate substantially all light from the light pulse that is reflected by the region, which is collected by the taking lens system, is registered by the third photosurface.